

FIG. 1

1 CTATGGCTCTTAGCCAAAACCAAGCCAAGTTTTCCAAAGGATTCGTCGTGATGATTGG
-32 M A L S Q N Q A K F S K G F V V M I W

60 GTACTATTCATTGCTTGTGCTATAACTTCAACTGAAGCTAGTCTAACCAAATGCCAACAG
5 -13 V L F I A C A I T S T E A S L T K C Q Q
-1 +1

120 CTCCAGGCCTCGGCTAACAGTGGTCTGATAGGTACTTATGTACCACAATGCAAAGAAACG
8 L Q A S A N S G L I G T Y V P Q C K E T

180 GGAGAGTTCGAAGAAAAACAATGCTGGGGATCGACTGGTTACTGTTGGTGTGTGGATGAA
10 28 G E F E E K Q C W G S T G Y C W C V D E

240 GATGGAAGAGATTCTAGGAACCAAGATCCGTGGATCTCCGGATTGCAGCCGCAGAAAA
48 D G K E I L G T K I R G S P D C S R R K

300 GCCGCGTTAACTTTGCCAGATGATGCAAGCCATCATTGTTAATGTCCCTGGTTGGTGT
68 A A L T L C Q M M Q A I I V N V P G W C

15 360 GGCCCTCCATCGTGTAAGCTGACGGCAGTTTTGACGAGGTTCACTGCTGCGCAAGTAAT
88 G P P S C K A D G S F D E V Q C C A S N

420 GGAGAATGCTACTGTGTGGATAAGAAAGGAAAAGAACTTGAAGGCACAAGACAACAGGGA
108 G E C Y C V D K K G K E L E G T R Q Q G

480 AGGCCAACCTGCGAAAGACACCTAAGCGAATGCGAGGAAGCTCGAATCAAGGCGCATTCA
20 128 R P T C E R H L S E C E E A R I K A H S

540 AACAGTCTTCGTGTTGAGATGTTTCGTGCCAGAGTGTGTTAGAAGATGGATCATATAACCCA
148 N S L R V E M F V P E C L E D G S Y N P

600 GTACAGTGCTGGCCTAGCACAGGATACTGTTGGTTCGTCGATGAAGGAGGGGTAAAGGTA
168 V Q C W P S T G Y C W C V D E G G V K V
25

660 CCAGGTTCCGATGTCAGATTTAAACGCCCCACATGCTAAGAAAAACACAGTGAACAAAGT
188 P G S D V R F K R P T C ---
199

720 GGCTAGTTTCCAGATCGAAAATAACTACAAAGGATTAATAAAATGTTAAATAATTTCTC
30 780 AATTCGGCTGTGATATATTTTTTCCAAGATAATTTAATCTGCATGTAGTTAACAGAAAAC
840 AATCTCAACTAGAAATAAAGACTACGGTAATAATGACAAAAA

FIG. 2

thyroglobulin domains with demonstrated CPI activity

human invariant chain	LTKCQ--EEVSHIPAVHPGSRPKC-DENGNVPLPQCYGISG---YCMCVFPNGTEVPNTRSR-GHHN-CSES
rat invariant chain (192-258)	KVLTCKQ--EEVSHIPDVHPGAFRPKY-DENGNVMPLOCHGSTG---YCMCVFPNGTEVPHTKSR-GRHN-CSEP
chum salmon egg inh.	HVPIDGIFHLKTPCE--LARDATHGPIGGFPTC-DYNGQYTPGQCWGSTG---YCMCVNSSGQKLPDTTPPGASNC
equistatin cDNA DOMAIN I	SLTKCQ--QLQASANSGLIGTYVPOC-KETGEFEKQCWGSTG---YCMCVDEDEKKEILGTRKIR-GSPD-CSRRK
equistatin purified domain I	SLSKCQ--QLQASANSGLIGAYVPOC-KETGEFEKQCWGSTG---YCMCVDEDEKKEILGTRKIR-GSPD-CSRRK
(protein sequence variants)	T V

thyroglobulin domains with demonstrated aspartic protease inhibitor activity (either domain II or III)

equistatin cDNA DOMAIN II	AALTLCQ--MMQALIVNVPGWCGPPSC-KADGSFDEVQCCASNG---ECYCVDDKKKKELEGTROQ-GRP-TGERHL
equistatin purified domain II	AALTLCQ--MMQALIVNVPGWCGPPSC-KADGSFDEVQCCASNG---ECYCVDDKKKKELEGTROK-GRP-SCERHL
(protein sequence variants)	T
equistatin cDNA DOMAIN III	SECEEARIRAKHSNSLRVEMFVPEC-LEDGSYNPVQCPSTG---YCMCVDEGGVAVPGSDVRFKRP-TC
equistatin purified domain III	SPCEEARLOAHNSNSLRVGMFVPOC-LEDGSYNPVQCPSTG---YCMCVDEGGVAVPGSDVRFKRP-TC
(protein sequence variants)	E IK L D

thyroglobulin domains with unknown protease inhibitor activity

mouse nidogen (824-892)	EHILGAGGADARPTLQGMFVPOC-DEYGHVPTQCHSTG---YCMCVDRDRDRELEGSRTTPGMPPCLST
human epithelial glycoprot (75-146)	GSKLGRRAKPEGALQNDGLYDPDC-DESLFKAKQCNG-TS---MCMCVNTAGVARTDKDTEIT---CSEVRVTV
bull frog saxiphilin(178-226)	KCLKERQVALGDEKVLGRFVPOC-DEKGNVEPOQFHGSTG---YSWCVNAIGEEIAGTKTPPGKIPAC



Thyroglobulin 1.1 (29-73) YVPQC-AEDGSFQTVQCQNDGR-----SCWCVGANGSEVLGSRQP-GRPVAC
Thyroglobulin 1.2 (97-141) YLPQC-QDSGDYAPVQCQDVQHV-----QCWCVDAGMEVYGTROQ-GRPKRC
Thyroglobulin 1.5 (597-639) FVPSC-TTEGSYEDVQCF-S-G-----ECWCVNSWGKELPGSRVDDGP-RC
Thyroglobulin 1.6 (664-707) FVPAC-TSEGHFLPVQCFN--S-----ECYCVDAEGQAIPTRSALGPKKC
Bovine thyroglobulin (1143-1215) QCPSLCEVLQSGVPSRRTSPGYSPACRAEDGFSVQCDDPAQG----SCWCVLGSGEVPGTRVA-GSQPACHSP
Mouse entactin (844-923) KTRCQLEREHILGAGGADAQRPTLQGMFVPQC-DEYGHVPTQCHSTG---YCWCVDRDGRLEGSRTPPGMRPPCLSTVAP
Human IGF-binding protein-3 YGPCRREMEDTLNHLKFLANVLSPRGVHIPNC-DKKGFYKKKQCRPSKGRKRGFCWCVDKYGQPLPGYTTKGKEDVHCYSWQSK
Human testican (305-381) QKPGGLPCQNMENMRIGKLSKGSLLGAFIPRC-NEEGYKATQCHGSTG---QCWCVDKYGNELAGSRKQ-GAV-SCHEEQET

consensus

C-----//-----P-C---G---QC-----CMCV---G-----//-----C



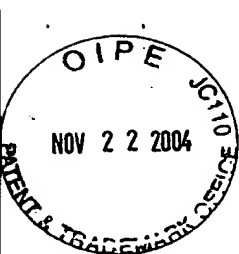


Figure 3

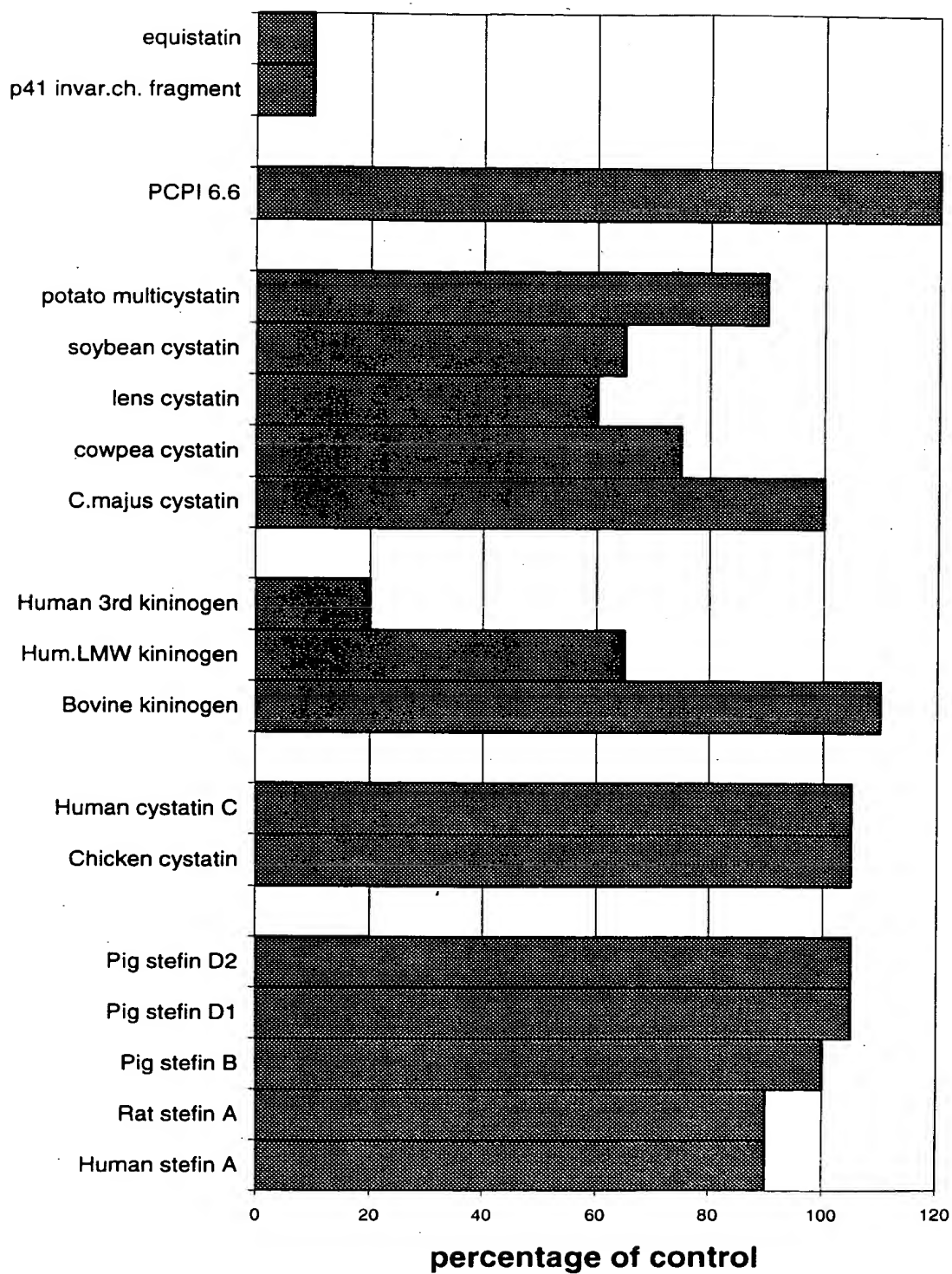




Figure 4a

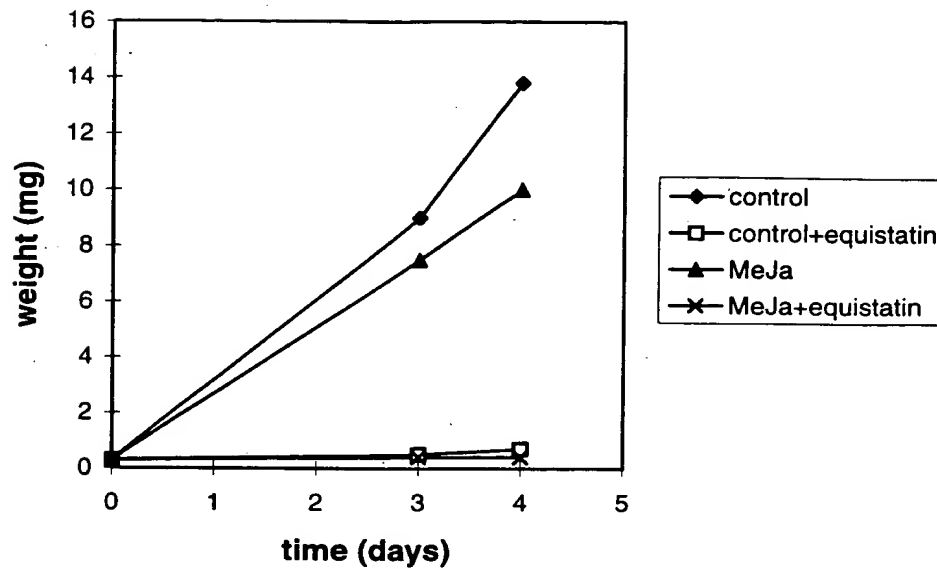


Figure 4b

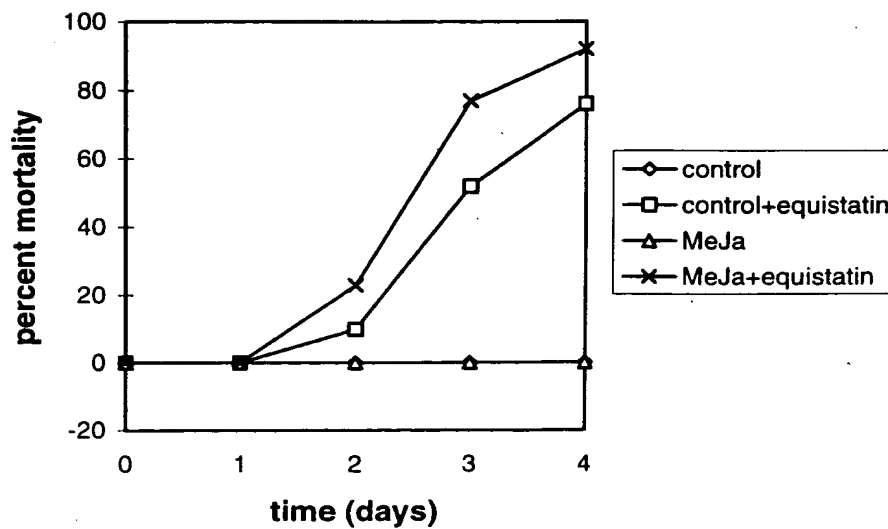
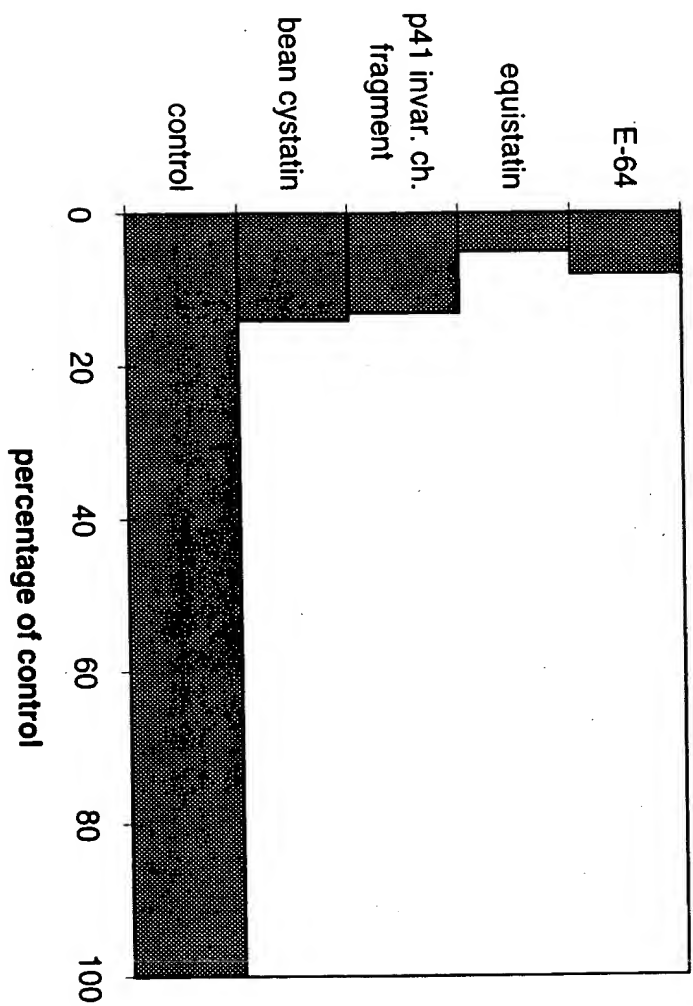
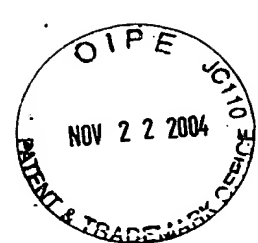


Figure 5





Fecundity of thrips adults on diet with equistatin (day 2)

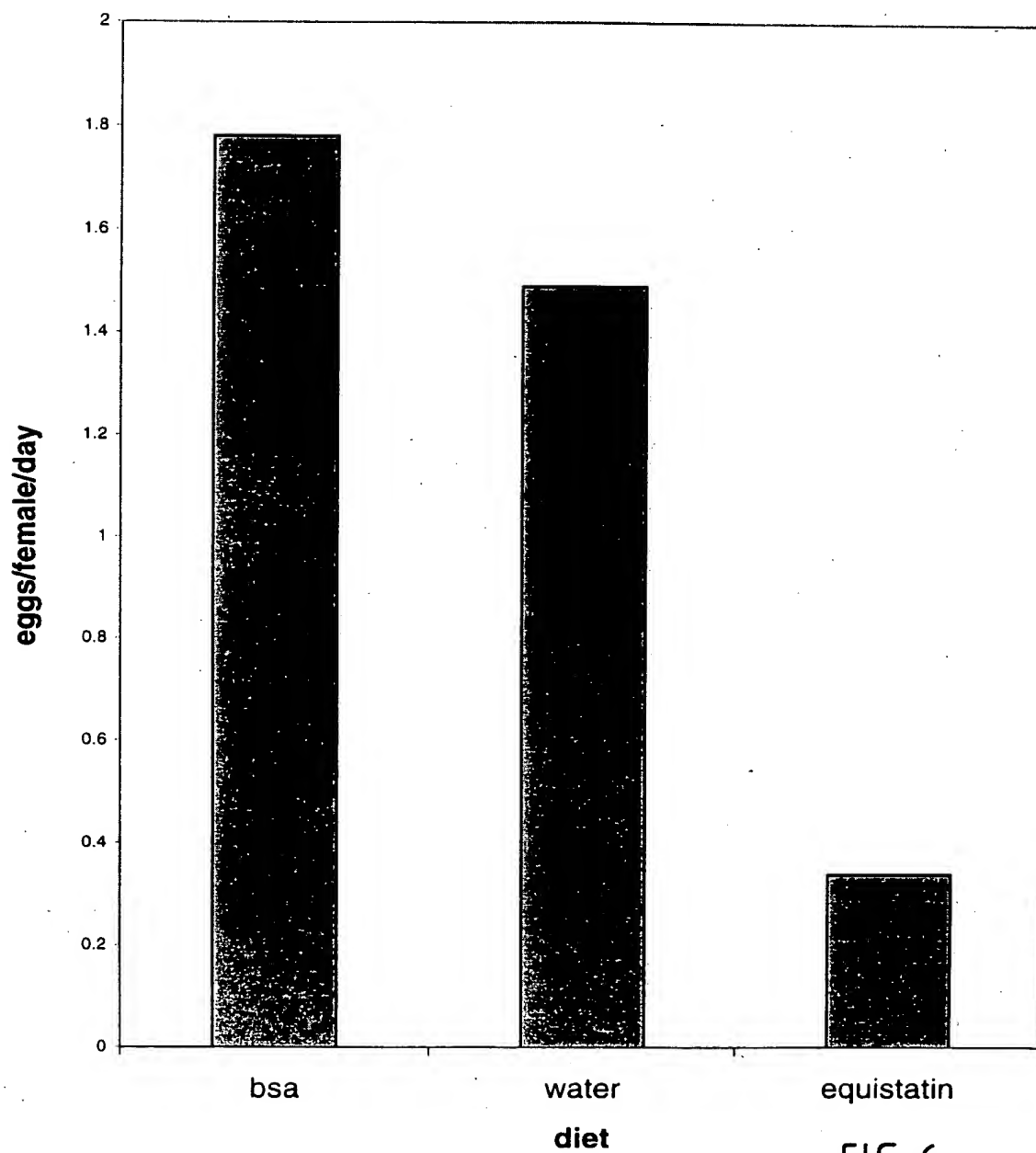


FIG. 6

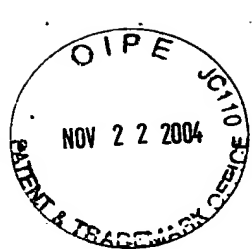


FIG. 7

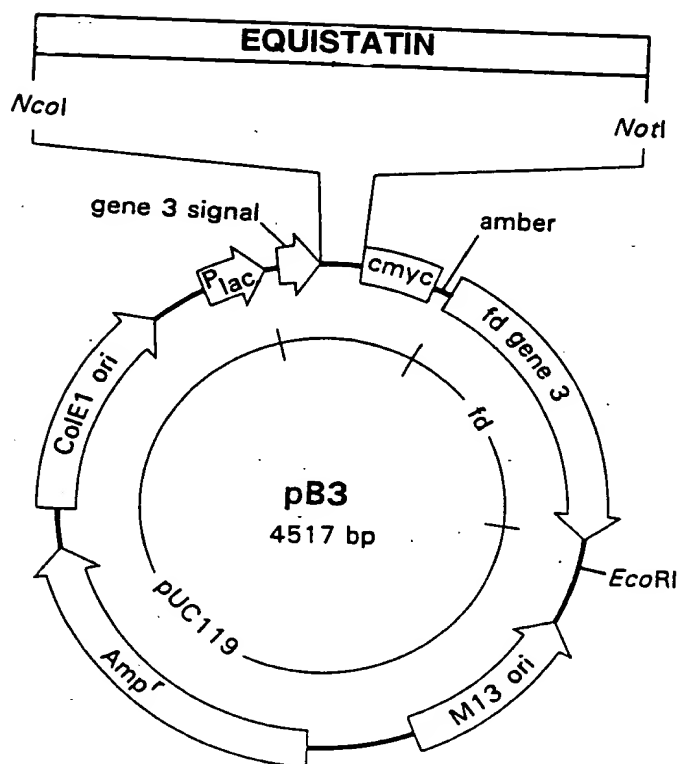
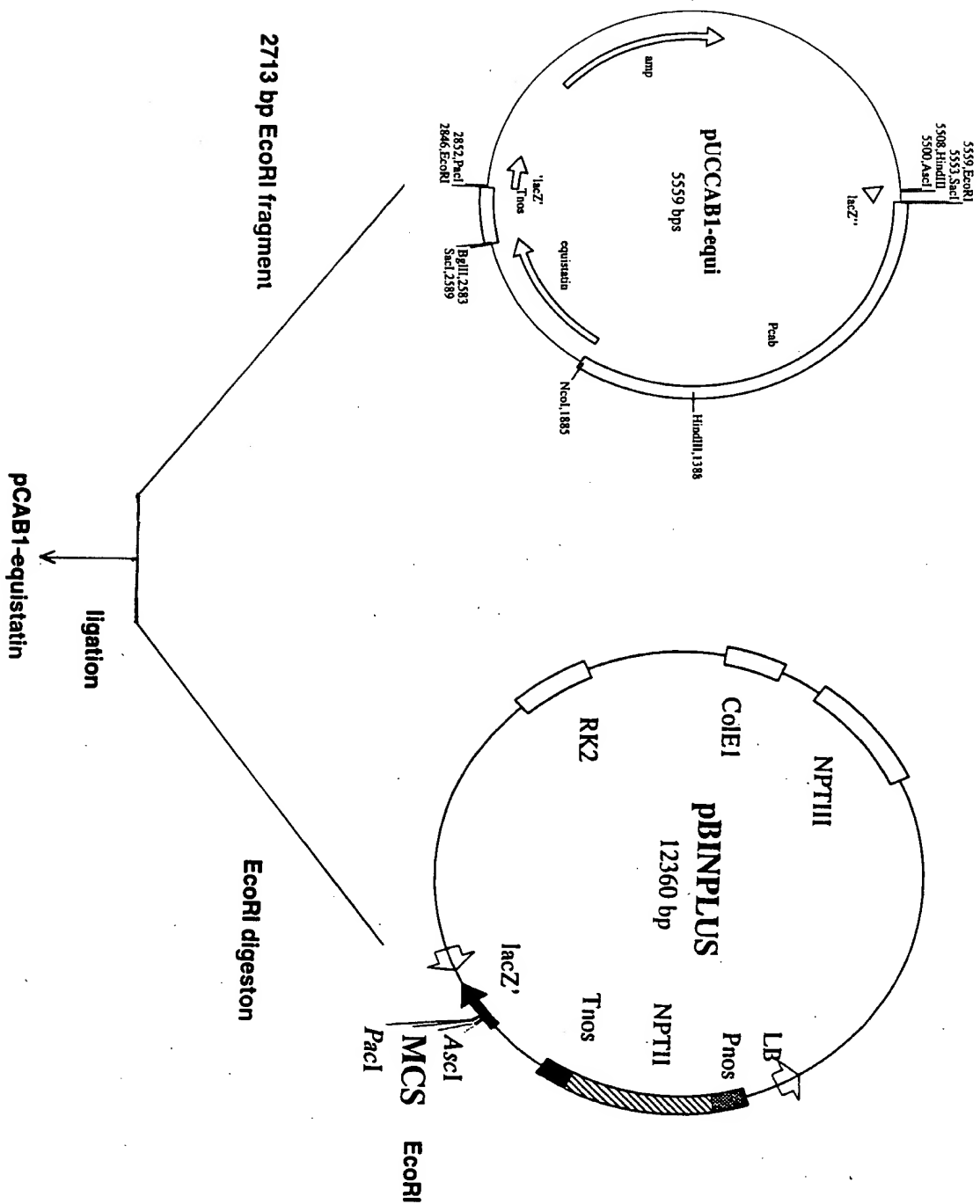


FIG. 8



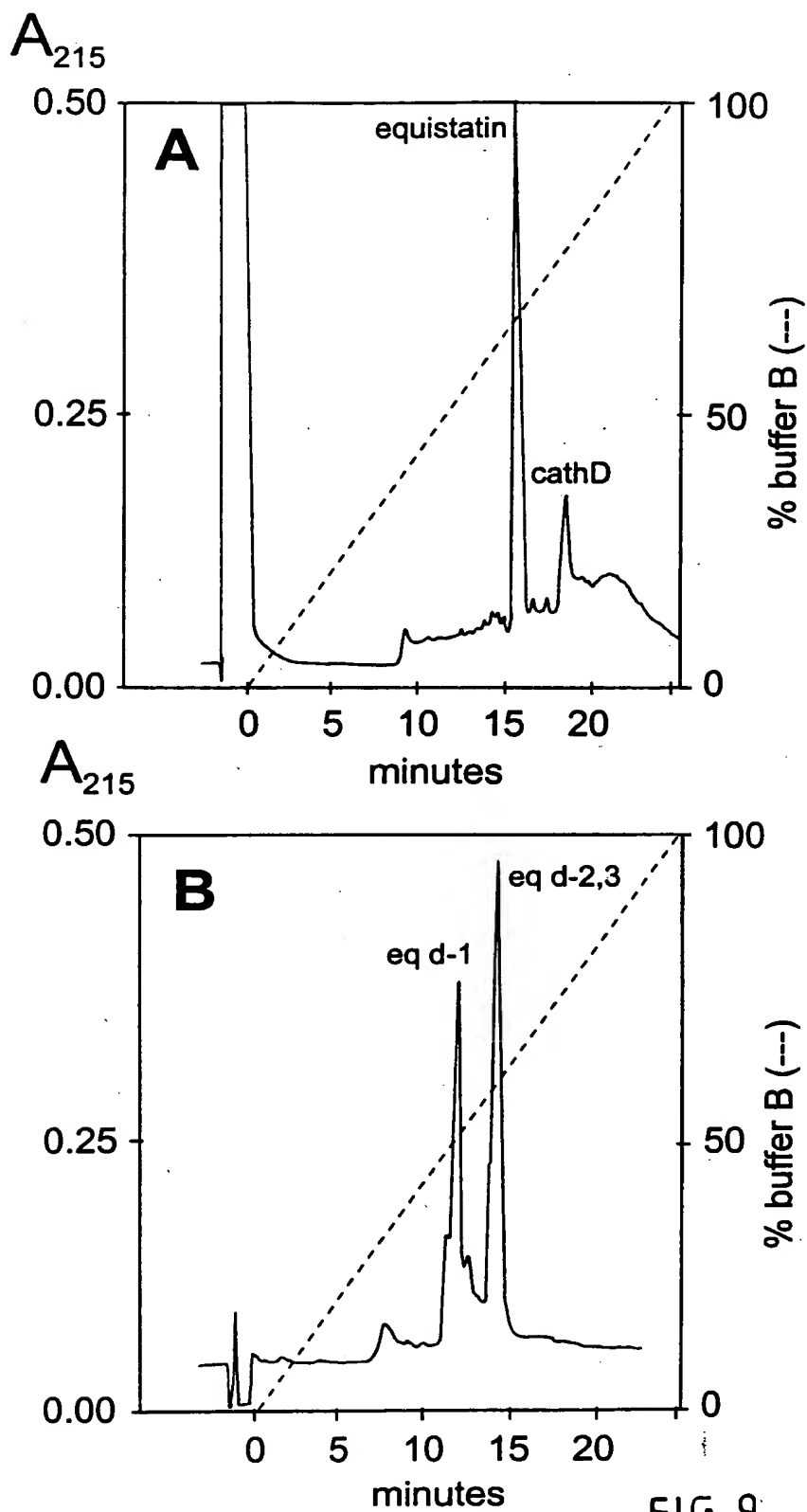


FIG. 9

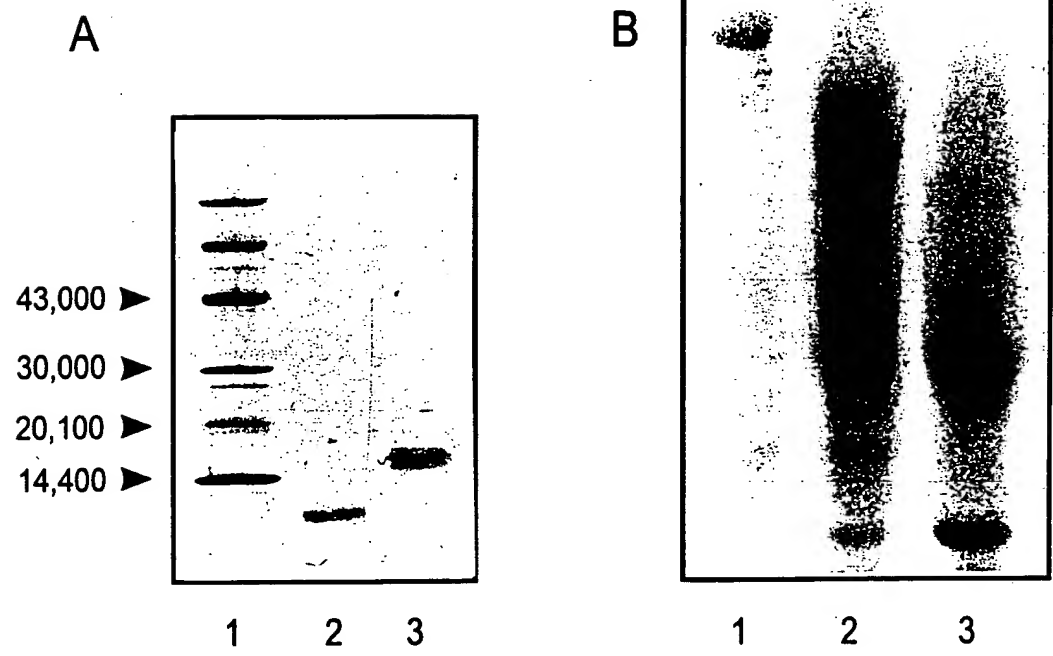


FIG.10

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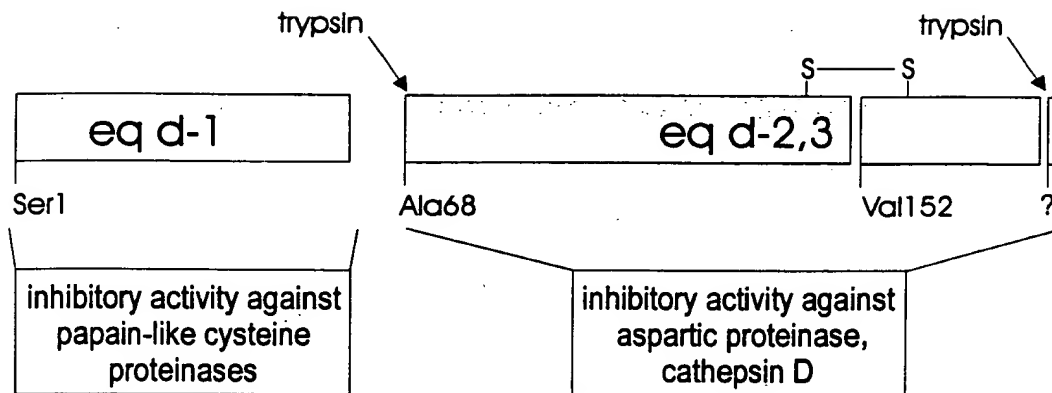
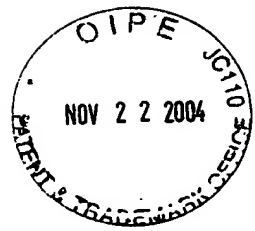


FIG.11

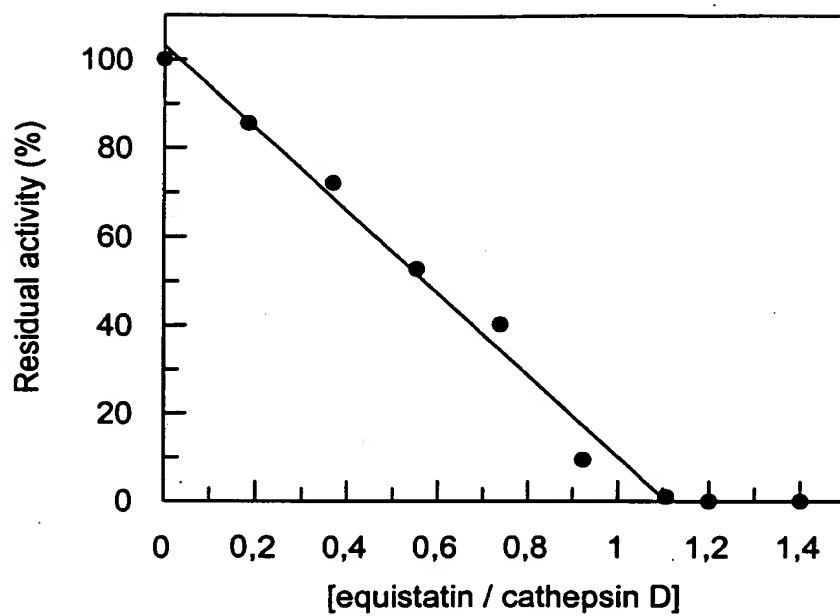


FIG. 12